

WHAT IS CLAIMED IS

1. A method for forming a metal line in a semiconductor device, the method comprising:
 - forming a lower adhesive layer on a semiconductor substrate;
 - forming a metal layer including aluminum on the lower adhesive layer;
 - forming an anti-reflection layer on the metal layer;
 - forming a photomask on the anti-reflection layer;
 - performing an initial etching, a main etching and an over-etching for the anti-reflection layer, the metal layer and the lower adhesive layer, respectively, in a region which is not protected by the photomask, using C_3F_8 as a main etching gas; and
 - removing the photomask residual on the anti-reflection layer.
2. A method as defined by claim 1, wherein the main etching for etching the metal layer are performed using a reactive gas including C_3F_8 , NF_3 and N_2
3. A method as defined by claim 2, wherein, when the main etching is performed, C_3F_8 is injected at 1 to 200sccm, NF_3 is injected at 1 to 100sccm, and N_2 is injected at 1 to 100sccm.
4. A method as defined by claim 2, wherein, when the main etching is performed, C_3F_8 is injected at 90sccm, NF_3 is injected at 50sccm, and N_2 is injected at 10sccm.
5. A method as defined by claim 4, wherein, as process conditions for the main etching, a pressure of 12mT, a source power of 1,000W and a bias power of 100W are used.
6. A method as defined by claim 5, wherein the metal layer is deposited at a thickness of 4,000 to 6,000 Å.

7. A method as defined by claim 2, wherein the initial etching for etching the anti-reflection layer is performed using a reactive gas including C_3F_8 , BCl_3 and Ar.

8. A method as defined by claim 7, wherein, when the initial etching is performed, C_3F_8 is injected at 1 to 200sccm, BCl_3 is injected at 1 to 100sccm, and Ar is injected at 1 to 100sccm.

9. A method as defined by claim 7, wherein, when the initial etching is performed, C_3F_8 is injected at 60sccm, BCl_3 is injected at 50sccm, and Ar is injected at 30sccm.

10. A method as defined by claim 9, wherein, as process conditions for the initial etching, a pressure of 12mT, a source power of 1,200W and a bias power of 130W are used.

11. A method as defined by claim 2, wherein the over-etching for etching the lower adhesive layer is performed using a reactive gas including C_3F_8 , NF_3 and N_2 .

12. The method of claim 11, wherein, when the over-etching is performed, C_3F_8 is injected at 1 to 200sccm, NF_3 is injected at 1 to 100sccm, and N_2 is injected at 1 to 100sccm.

13. A method as defined by claim 11, wherein, when the over-etching is performed, C_3F_8 is injected at 80 sccm, NF_3 is injected at 50sccm, and N_2 is injected at 50sccm.

14. A method as defined by claim 13, wherein, as process conditions for the over-etching, a pressure of 12mT, a source power of 1,000W and a bias power of 80W are used.